MEME: A distributed consensus protocol for dynamically scalable networks

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Abstract

We define a dynamically scalable, eventually consistent distributed ledger as a cellular automation governed by of the optimization of two objectives: maintaining an invariant measure of computational cost for rewriting history and optimally shuffling data over network such that total state is distance regular[1] under toroidal search space[2] (or can be queried within n-hops). These constraints are governed by a differential model[3], which we show is satisfied by a poincare protocol.

Introduction

If we realize that our process of distributed consensus is hyperbolic[4], it follows that the corresponding poincare protocol is carried by toroidal homeomorphisms[5].

Model Definition

If we define our Merkel DAG as a topological fiber bundle[6], network stability is governed by the steady states of a differential equation. Because a poincare

[1] distance regular `http://www.math.ucsd.edu/~fan/wp/green.pdf`

[2] 6.4.1 Toroidal Distance Equation `https://scholarworks.gsu.edu/cgi/viewcontent.cgi?article=1108&context=cs_diss`

[3] 7 Networks with Communication Time-Delays `http://www.seas.ucla.edu/coopcontrol/papers/om03-tac.pdf`

[4] 6.4.1 Toroidal Distance Equation `https://scholarworks.gsu.edu/cgi/viewcontent.cgi?article=1108&context=cs_diss`

[5] 2.2 `https://arxiv.org/pdf/1506.06945.pdf`

[6]

protocol is equivalently a poincare complex, the state space of the network's configuration complex is a differentiable manifold and can be governed by a differential model. We define a valid construction as a cellular automation who's cw-complex is poincare and who's manifold is a valid solution (state) to the governing model.

Planar cellular solution

We explicitly define the functors and sheaves. By showing that this construction is a poincare protocol and that the protocol manifold (Planar cellular solution) adheres to the boundary conditions of the differential equation, we show equivalence. By equivalence, the steady states of the network correspond to modes of growth.

Results and properties

The result is that our planar cellular solution exhibits dynamic scaling. We call this dynamically scaling validation protocol, 'spectral consensus' as it corresponds to the graph spectra of the network at a given time. The intervals of these spectra follow from the fact that a

References

Ansov flows[7]

[7] `https://www.math.upenn.edu/~ghrist/preprints/anosov.pdf`